

Examining the Diagnostic Pattern of Eosinophilic Esophagitis Among Medicaid Enrollees in the Deep South U.S.

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Background

- Eosinophilic esophagitis (EoE) is a chronic disorder characterized *clinically* by symptoms of esophageal dysfunction and *histologically* by eosinophilic infiltration of the esophageal epithelium and Esophageal Eosinophil count >15 eos/hpf.
- EoE is an antigen-driven disease associated with dysfunction of the epithelial barrier and chronic type 2 inflammation
- Data show that the prevalence and incidence of EoE have steadily increased over the past 2 decades in the United States and around the world
- While the treatment options for EoE are evolving, there is no standardized approach for measuring treatment response
- Evidence from studies indicates there is a disparity in the diagnosis and recognition of EoE, especially among low-income patients. Further, there is limited research on the burden and recognition of EoE focusing on the low-income population in the US.

Study aim:

- This study sought to examine the diagnostic pattern and factors that influence the diagnosis of EoE in the Medicaid population in the Deep South US.

Methods

Data Source:

- Alabama Medicaid database (2012-2020)
- Case identification: International Classification of Disease code 9th and 10th edition - ICD-9 (530.13) and ICD-10 (K20.0)

Outcome definition:

- Trend in EoE diagnosis
- EoE diagnosis prevalence: the number of EoE diagnoses per 100,000 Medicaid enrollees
- Inferential Statistics: Hierarchical logistics models
- A p-value of <0.05 was considered statistically significant
- Statistical analysis was performed using SAS software (version 9.4, SAS Institute Inc., Cary, NC, USA)

Results

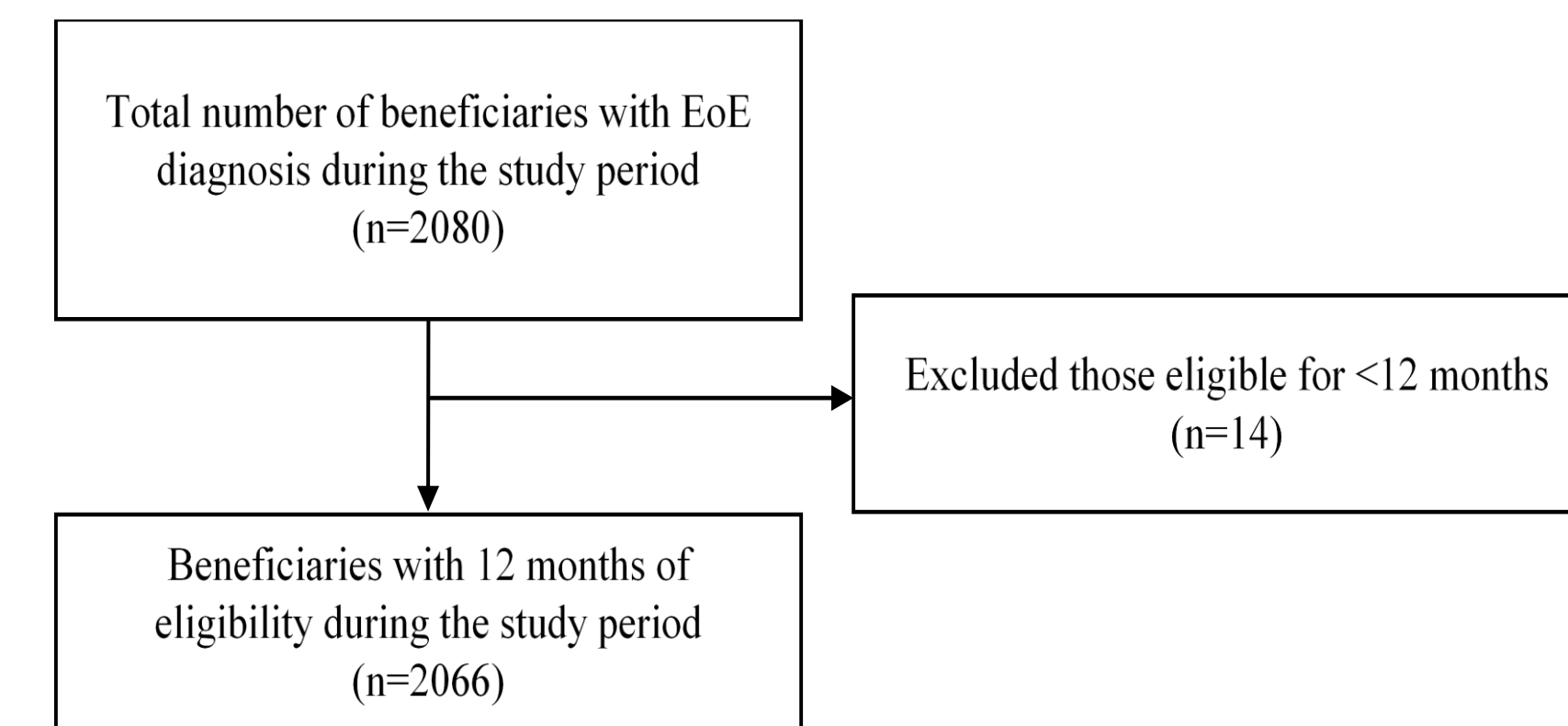


FIGURE 1. Flow diagram of data linkage and exclusion for the final Medicaid study population.

- Total of 2080 received EoE diagnosis (2012-2020)
- 69% (0-18 years), 53% (males), (60%) non-Hispanic whites
- Large metro residence (75%)
- Estimated prevalence: 112.4 per 100,000
- Incidence: increased from 25/100,000 to 62/100,000

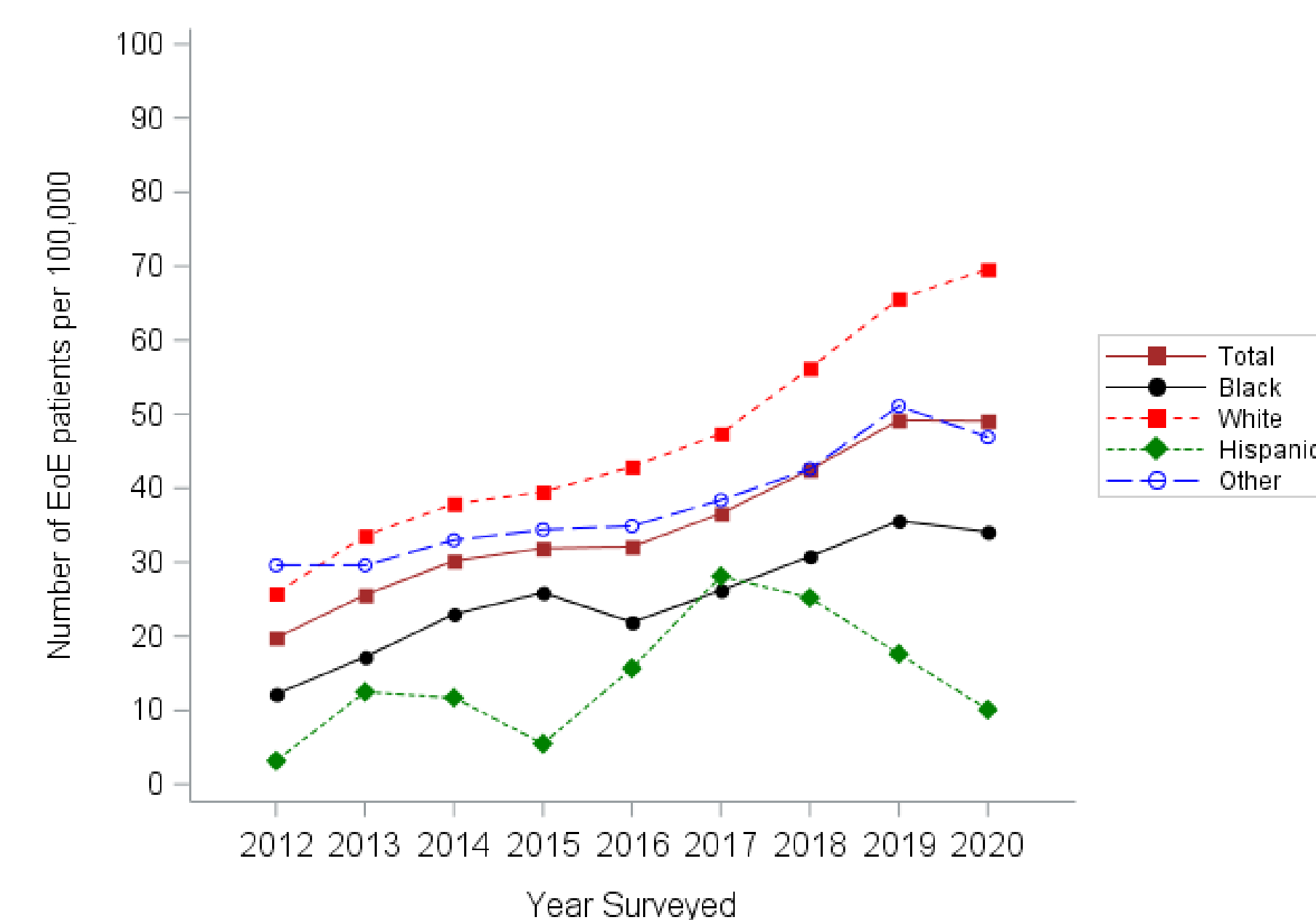


Figure 2: The trend in the prevalence of EoE by race

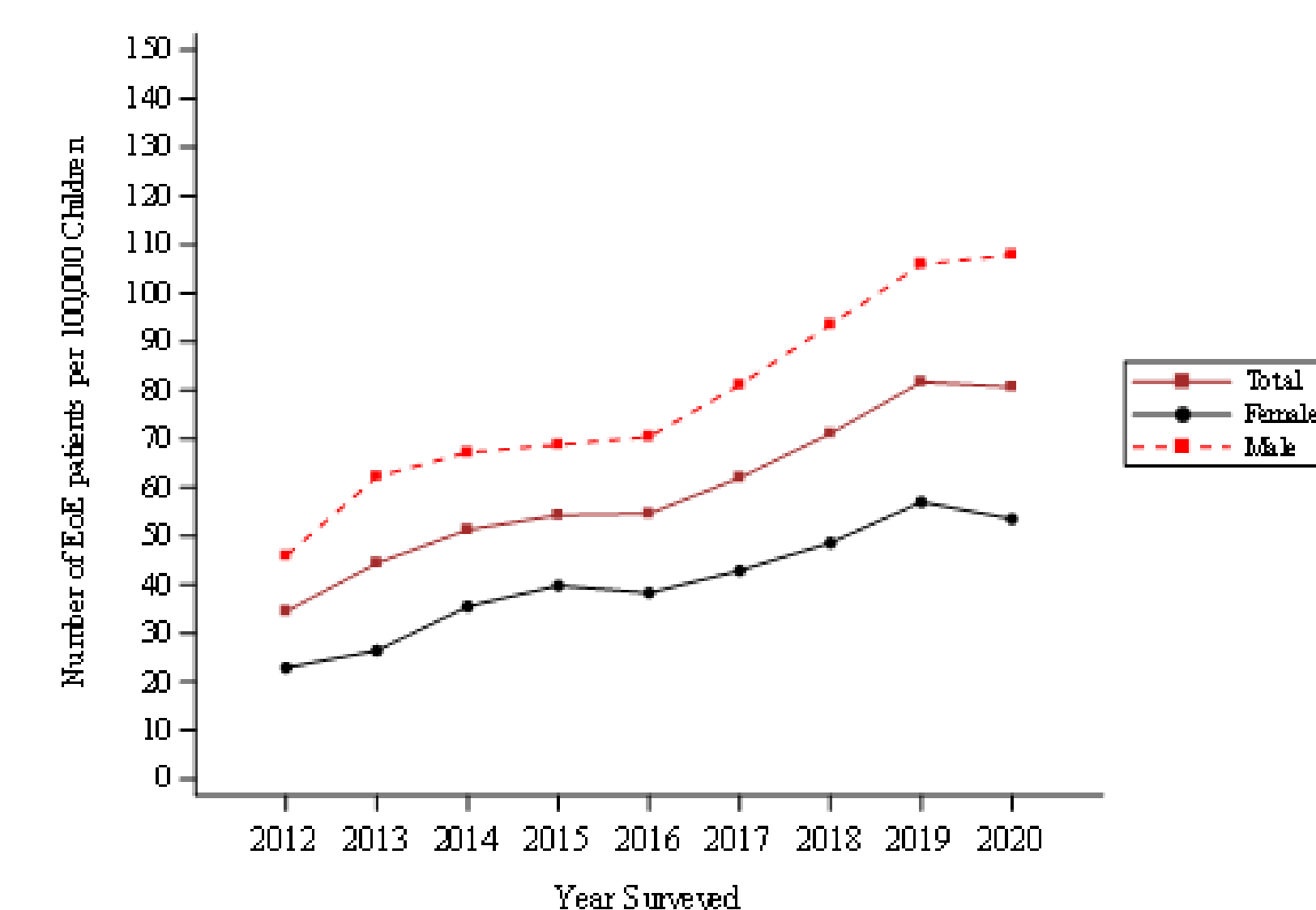


Figure 3: The trend in the prevalence of EoE by sex

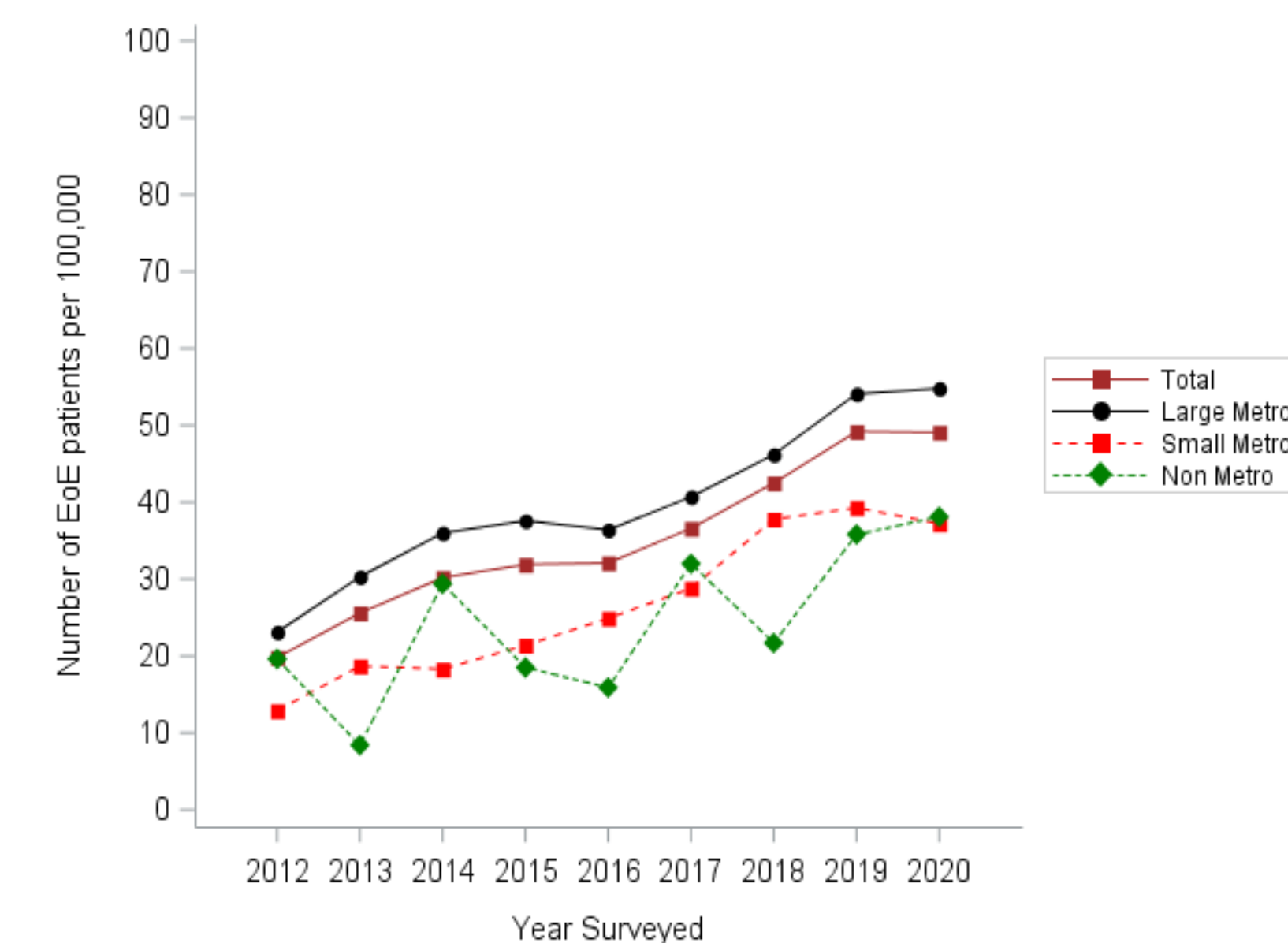


Figure 4: The trend in the prevalence of EoE by residence

Table 1. Association between EoE diagnosis and independent variables among Medicaid patients. (N=2080)

Variable	Model 1	Model 2	Model 3
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Resident			
Non-metro (ref)	-	-	-
Small metro	1.09 (0.81-1.47)	1.09 (0.81-1.46)	1.15 (0.85-1.56)
Large metro	1.33 (1.01-1.77) **	1.33 (1.02-1.77) **	1.38 (1.03-1.84) **
Age group			
<18 (ref)	-	-	-
> 18	0.89 (0.80-0.98) **	0.89 (0.81-0.99) **	0.61 (0.53-0.69) **
Gender			
Male (ref)	-	-	-
Female	1.05 (0.94-1.17)	1.05 (0.94-1.17)	1.16 (1.04-1.29) **
Race			
Black (ref)	-	-	-
White	-	1.03 (0.91-1.16)	1.10 (0.97-1.25)
Hispanic	-	0.98 (0.66-1.47)	1.21 (0.80-1.83)
Other	-	1.00 (0.85-1.19)	0.93 (0.78-1.11)
Eligibility			
Disabled (ref)	-	-	-
Non-disabled	-	-	0.33 (0.28-0.38) **

** Indicates p-values of <0.05 based on type III test of effects
aOR = Adjusted odds ratio, CI = Confidence interval, ref = reference

Table 2. Association between EoE diagnosis and independent variables among Medicaid patients (<18 years old, n=1431)

Variable	Model 1	Model 2	Model 3
	aOR (95% CI)	aOR (95% CI)	aOR (95% CI)
Resident			
Non-metro (ref)	-	-	-
Small metro	1.02 (0.70-1.47)	1.02 (0.70-1.47)	1.07 (0.73-1.57)
Large metro	1.35 (1.01-1.93) **	1.35 (1.02-1.97) **	1.40 (1.03-2.01) **
Age group			
0-4 (ref)	-	-	-
5-9	1.18 (1.01-1.39) **	1.17 (1.01-1.39) **	1.09 (0.92-1.30)
10-14	1.10 (0.94-1.30)	1.10 (0.93-1.30)	1.01 (0.85-1.19)
15-18	1.57 (1.31-1.88) **	0.89 (0.81-0.99) **	0.61 (0.53-0.69) **
Gender			
Male (ref)	-	-	-
Female	1.08 (0.95-1.23)	1.08 (0.95-1.23)	1.14 (1.01-1.29) **
Race			
Black (ref)	-	-	-
White	-	1.00 (0.86-1.16)	1.11 (0.95-1.29)
Hispanic	-	1.06 (0.68-1.63)	1.24 (0.80-1.92)
Other	-	0.98 (0.81-1.19)	0.89 (0.73-1.09)
Eligibility			
Disabled (ref)	-	-	-
Non-disabled	-	-	0.23 (0.19-0.29) **

** Indicates p-values of <0.05 based on type III test of effects
aOR = Adjusted odds ratio, CI = Confidence interval, ref = reference

Conclusions

Our study shows that the prevalence of Eosinophilic Esophagitis has increased remarkably among low-income populations in the deep South US. Findings from this study also suggest that EoE prevalence has grown in both children and adults from low-income families irrespective of race, gender, and place of residence (urban or rural). Patients' demographic characteristics such as living in large metro areas and patients' age are significantly associated with the likelihood of recognition of EoE in this population.

Cost and accessibility of specialized care and treatments could be major barriers in the management of low-income populations living with EoE.

The main strength of this study is the large representative sample of the low-income population in the deep south. Also, the prevalence estimation is based on clinically diagnosed cases with EoE.

Our study is primarily limited by the utilization of only Alabama Medicaid enrollees. Therefore, this result may not be generalizable since Medicaid eligibility policies vary by state.

References

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Acknowledgments

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